

Lesson 5: Working Within the Unit

Lesson Overview

In Lesson 4, you learned how to respond to common requests for GIS products and services. In this lesson, you will learn how to work within a GIS Unit (GIU). You will learn how geospatial products are compiled and analyzed and how metadata is used to document GIS data. You will also learn about dealing with the time constraints you will encounter when working in a GIU.

This lesson should take approximately 25 minutes to complete.

Learning Objectives

By the end of this lesson, you will be able to:

- Compile geospatial data into geospatial products
- Analyze data to support incident decision making
- Identify how to document data
- Identify strategies for working within time constraints

Tying It Back to the Job

This lesson aligns with the following Position Task Book (PTB) Behaviors/Activities:

- Manage geospatial data
- Generate geospatial products
- Practice effective and appropriate interpersonal communication and team behavior

Importance of Geospatial Products

During an incident, the geospatial products you produce are used across all levels of FEMA to help decision-makers allocate and deploy resources in support of State and local partners and make the critical decisions needed to support the mission.

You are responsible for gathering the information needed to develop the requested products. Necessary information will come from a variety of sources and will be provided in diverse formats.

Data Gathering

Gathering timely and accurate data is a critical GIS task. During a disaster, you will be challenged to quickly gather and combine information to create products that can help emergency planners more effectively support the mission.

As a GISP, you will need to very quickly become familiar with the data sources available to you so that you can quickly access the information you need. You may even want to develop a checklist of available data sources that you can refer to as needed.

Compiling Geospatial Data to Create Products

Once you have the data you need, your next task is to compile the data into the geospatial products you have been asked to produce. Depending on the needs of your customer, you may be asked to provide products in the form of a map, a spreadsheet, a briefing slide, or even a written report.

Be sure to work closely with your customer to identify the type of product needed.

Data Layers for GIS

As you have already learned, the products that you will be asked to produce depend on the type of incident and the stage of the incident you are in. In some cases, you may need to compile multiple layers of data to create the product.

For example, in the event of a flood, emergency planners will want to know where the dry areas are located so that disaster facilities can be established. To meet this need, you may need to create maps showing flood extent layered with information about transportation networks and available facilities.

Data Analysis

Regardless of the complexity of the task, your goal is always to develop timely, accurate, and relevant geospatial information and products that can be easily interpreted by multiple end users for a wide range of disaster relief functions.

This means that you will do more than simply compile data. You also need to carefully analyze the data to ensure that the products you create give decision makers the information they need to make informed decisions.

Data Analysis and Incident Decision Making

Accurate and timely data analysis is critical in a disaster situation and can even result in lives saved.

Read the Story

Data Analysis and Incident Decision Making

“The incident area is one of the most important situation products that the GIU can provide as it represents the areas where resources are directed to support the most severely impacted communities. Defining the incident area relies upon authoritative information from SMEs.

During Hurricane Ike, we received a NOAA SLOSH model indicating a completely inundated area that included Texas City, Beaumont and Galveston as well as the Bolivar peninsula. The evening prior to landfall, the FCO indicated that we were looking at an estimated 80-billion dollar event in which 40% of the population had not evacuated, resulting in a heavy ESF-9 US&R footprint. The need for the GIU to provide comprehensive information to definite the incident area was of paramount importance.

Over the next 72-hours post landfall, we coordinated closely with NOAA and the State to gradually refine the incident area and determined that certain key areas were not catastrophically impacted. While the SLOSH model from the NWS was the authoritative source, it no longer served as the best available information as it began to conflict with other information sources.

Further analysis showed that the SLOSH model had overestimated the impact area because the pixel resolution and vertical datum were not adjusted to include the seawalls and other control structures that were responsible for protecting both Texas City and Beaumont from the Storm surge.

Careful analysis enabled us to make the decision to refine and correct the incident area and to provide more accurate information for both a briefing for the President of the United States and for life saving and life sustaining operations support.”

- As told by the FEMA GIU Leader for this disaster.

What is Metadata?

As a GISP, you are also responsible for creating metadata records for the data you develop. A metadata record represents the who, what, when, where, why, and how of a digital resource. It compiles information into a single record that captures the basic characteristics of your product and makes your product identifiable.

Metadata can be used to document common types of data, including GIS files, databases, and imagery.

Metadata Standards

The current Federal standard for geospatial data is the Content Standard for Digital Geospatial Metadata developed by the Federal Geographic Data Committee (FGDC). Whenever possible, full metadata for all new or event-specific data, GIS files or earth imagery should be created in compliance with these standards.

NOTE: Any data that will be made publicly available on the www.fema.gov site must have full metadata.

Metadata Minimum Elements

Sometimes, during the response to an incident, there is not sufficient time or resources to create fully compliant metadata records. For those times, metadata records must be created with the following minimum elements:

- Abstract
- Title
- Originator
- Publication Date
- Process Description
- Geographic Coordinate System Name
- Horizontal Datum Name
- Security Classification
- Time Period (Currency, Date and time)

The Nature of the Beast

As a GISP, you may find yourself working on multiple projects simultaneously. At any given time, you could be providing information about shelter or housing, responding to a request for information about urgently needed medical supplies, and gathering data about the location of logistics facilities.

Multi-tasking is a crucial skill that you will need as you work on diverse projects for different groups

Dealing with Tight Deadlines

When working within an incident, you are often required to produce geospatial products on a very tight timeline. To accomplish this, keep the following considerations in mind:

- Prioritize geospatial product requests
- Negotiate timelines for production

- Communicate realistic expectations
- Ask for additional resources if needed

Prioritize geospatial product requests

Not all geospatial products have the same level of priority. You should check with your supervisor (GIMG, GIUL, SITL or others) to determine which geospatial products are required most urgently, and begin working on those first.

Negotiate timelines for production

The customer may be unaware of your workload and may not understand the amount of time required to create a geospatial product. Do not hesitate to express your concerns about a deadline for a product with your customer and/or your supervisor when necessary.

Communicate realistic expectations

If products are needed on a short timeframe, there is bound to be a trade-off in terms of the quality of the product. Make sure you communicate this clearly with your supervisor and/or customer. Remember, having products created in a timely manner is sometimes more important than making them visually appealing with the best colors, symbology, etc. In general, if you have any issues that would prevent you from accomplishing the objective in a timely manner, you should communicate these issues as early in the process as possible.

Ask for additional resources if needed

If you feel overwhelmed and think it is not possible to complete all the geospatial products assigned to you, you should feel comfortable going to your supervisor to ask for additional resources. If other GISPs are not available, your supervisor may have suggestions for another solution.

Lesson Summary

This lesson presented the following topics:

- Compile geospatial data into map and data products
- Analyze data to support incident decision making
- Identify how to document data
- Identify strategies for working within time constraints

The next lesson will describe tactics for working with sensitive data.